UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 36519

CSAH NO. 30

OVER THE

STURGEON RIVER

DISTRICT 1 - KOOCHICHING COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 3512

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure unit inspected at Bridge No. 36519, Pier 2, was found to be in good and sound condition with light corrosion covering 10 percent of the steel encased concrete piles from the waterline to the channel bottom. The channel bottom around the substructure unit appeared stable with 6- to 12-inch-diameter cobbles and no scour present.

INSPECTION FINDINGS:

(A) The coating on the steel encased concrete piles exhibited 100 percent failure from 1 foot above the waterline to the channel bottom exposing the prime-coat and/or light corrosion on 10 percent of the pile surface area.

(B) The channel bottom consisted of sandy gravel with 6-inch-diameter cobbles and probe rod penetrations from 3 to 6 inches along the downstream half of the pier. Along the upstream half of the pier, 1-foot-diameter and smaller cobbles were present with no probe rod penetrations.

RECOMMENDATIONS:

(A) Reinspect all substructure units underwater within the normal maximum (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 36519

Feature Crossed: The Sturgeon River

Feature Carried: CSAH No. 30

Location: District 1 - Koochiching County

Bridge Description: The superstructure consists of three spans of multiple prestressed concrete double T-beams. The superstructure is supported by two reinforced concrete abutments founded on piles and two steel encased concrete pile piers. The piers are numbered 1 and 2 starting from the south end of the bridge.

2. INSPECTION DATA

Professional Engineer Diver: Daniel G. Stromberg, P.E.
State of Minnesota, P.E., No. 21491

Dive Team: Michelle D. Koerbel, Matt J. Lengyel

Date: August 24, 2002

Weather Conditions: Sunny, "77EF

Underwater Visibility: "3.0 Foot

Waterway Velocity: "2 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Pier 2.

General Shape: Piers 1 and 2 consist of a single line of 13 steel encased concrete piles supporting a reinforced concrete cap.

Maximum Water Depth at Substructure Inspected: Approximately 3.0 Feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the upstream end of Pier 2.

Water Surface: The waterline was approximately 18.4 feet below reference.
Assumed Water Elevation = 81.6.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

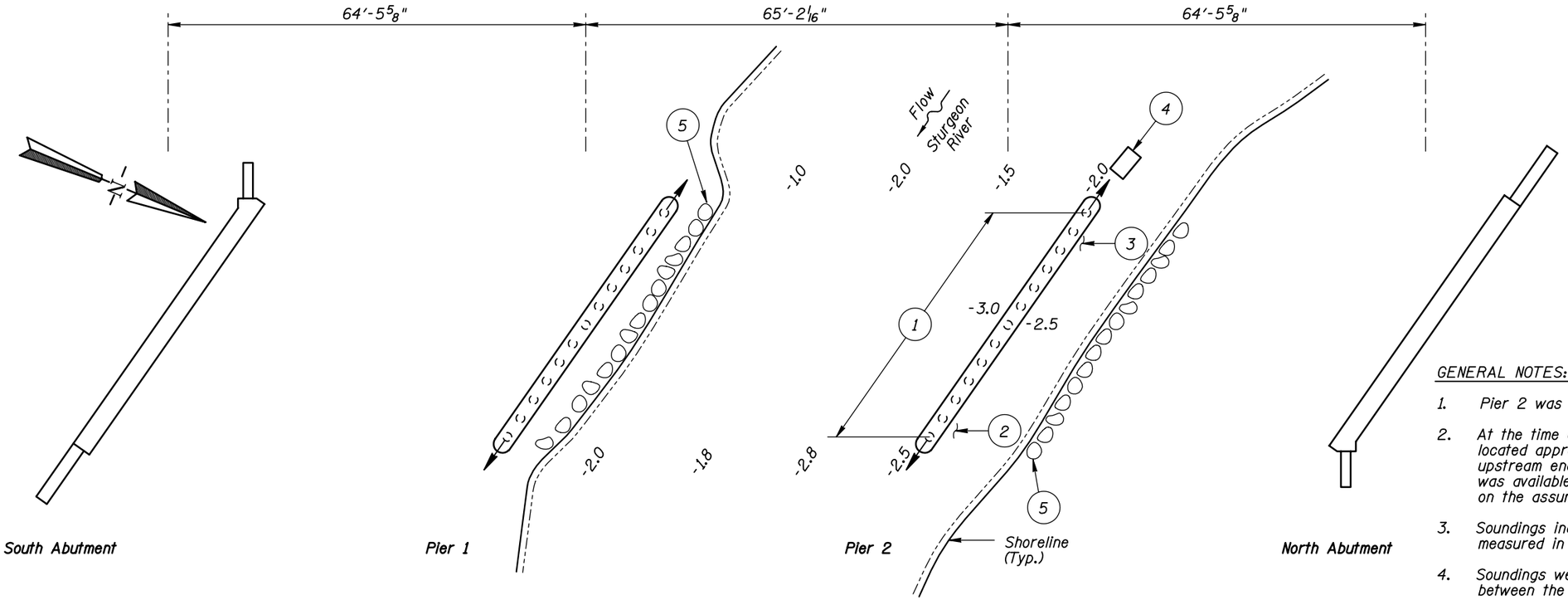
Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/08/02

Item 113: Scour Critical Bridges: Code I/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

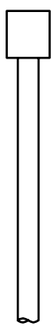
_____Yes ___X__No



SOUNDING PLAN

GENERAL NOTES:

1. Pier 2 was inspected underwater.
2. At the time of inspection on August 24, 2002, the waterline was located approximately 18.4 feet below the top of the pier cap at the upstream end of Pier 2. Since insufficient bridge elevation information was available, a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 81.6.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.



TYPICAL END VIEW OF PIERS

INSPECTION NOTES:

(1) The top coat on the steel encased concrete piles exhibited 100 percent failure from 1 foot above the waterline to the channel bottom exposing the prime coat or bare steel which exhibited light corrosion on 10 percent of the exposed steel surface area.

(2) The channel bottom consisted of sandy gravel with 6-inch-diameter cobbles and probe rod penetrations from 3 to 6 inches along the downstream half of the pier.

(3) The channel bottom consisted of 1-foot-diameter and smaller cobbles with no probe rod penetration along the upstream half of the pier.

(4) An air conditioning unit was observed on the channel bottom at the upstream nose of the pier.

(5) A narrow band of 1-foot-diameter cobbles were observed along the shorelines.

Legend

-2.0 Sounding Depth from Waterline (8/24/02)

16" Diameter Steel Encased Concrete Pile

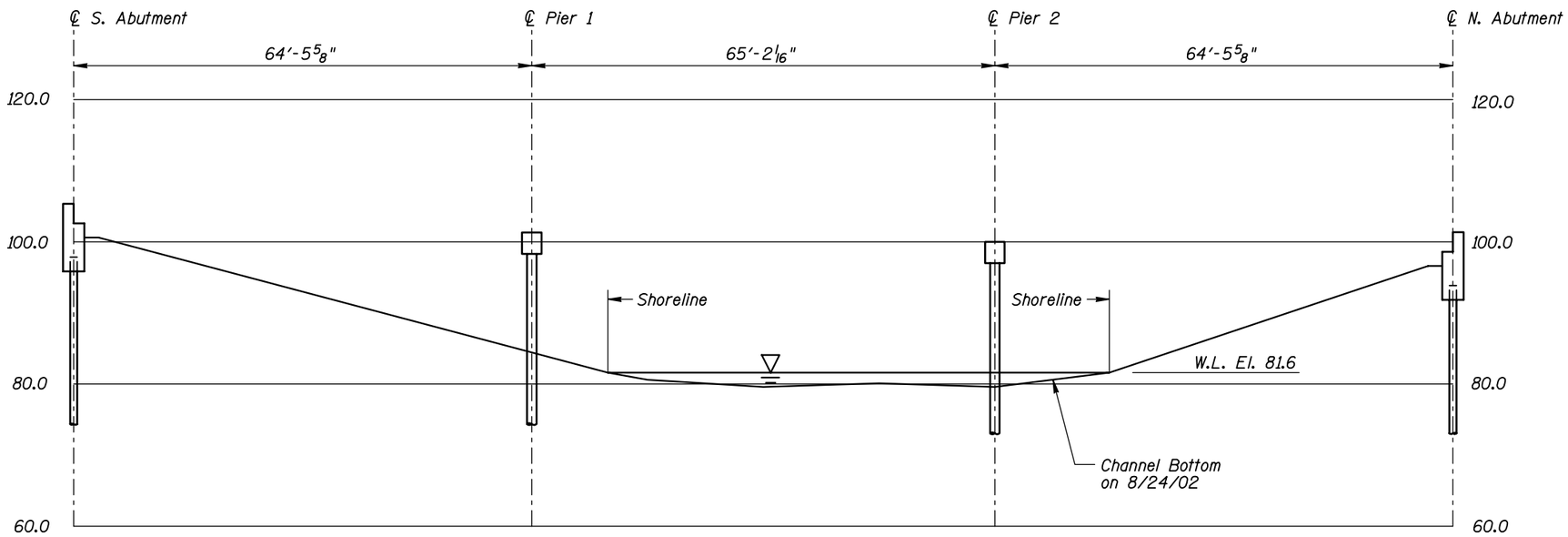
Battered 16" Diameter Steel Encased Concrete Pile

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

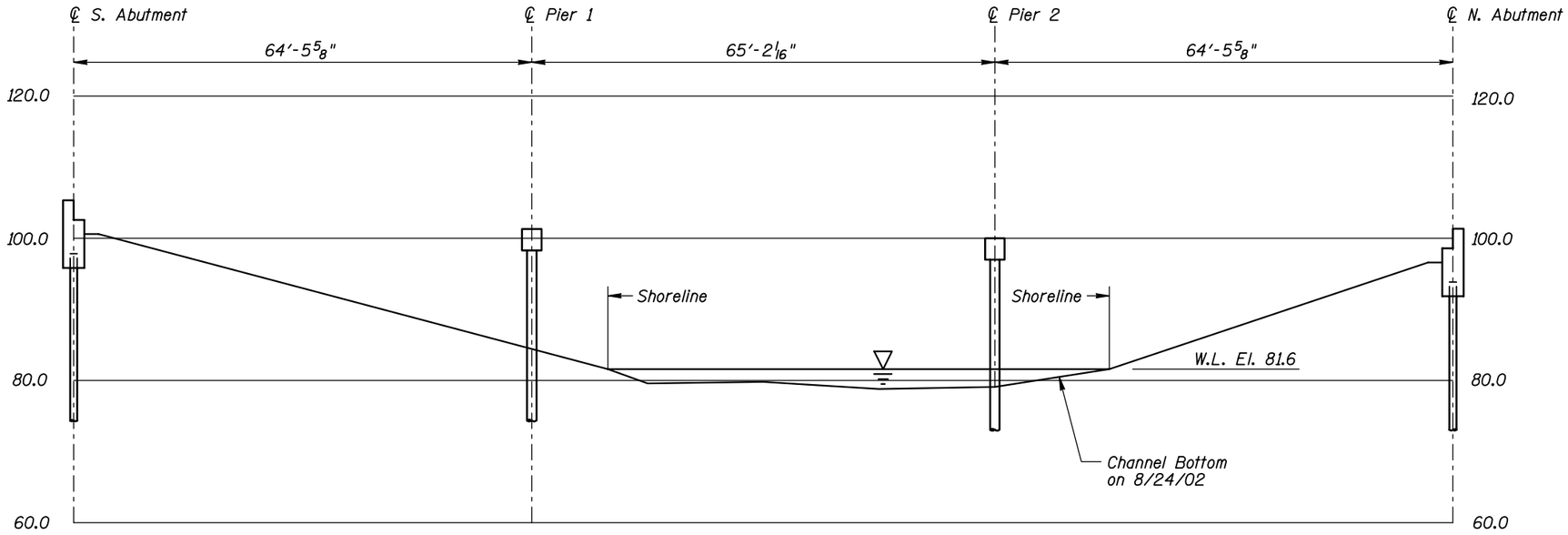
STRUCTURE NO. 36519
OVER THE STURGEON RIVER
DISTRICT 1, KOOCHICHING COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: AUG. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35123651S		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 36519
OVER THE STURGEON RIVER
DISTRICT 1, KOOCHICHING COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: AUG. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: 1"=20'
Code: 351236519		Figure No.: 2

Photograph 1. Overall View of the Structure, Looking North.

Photograph 2. View of Pier 2, Looking East.

Photograph 3. View of Pier 1, Looking Southeast.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: August 24, 2002
ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E.
BRIDGE NO: 36519 WEATHER: Sunny, "77EF
WATERWAY CROSSED: The Sturgeon River
DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER
PERSONNEL: Michelle D. Koerbel, Matt J. Lengyel
EQUIPMENT: SCUBA, U/W Light, Scraper, Lead Line, Sounding Pole, Probe Rod, Camera
TIME IN WATER: 3:00 P.M.
TIME OUT OF WATER: 3:20 P M.
WATERWAY DATA: VELOCITY "2 f.p.s.
VISIBILITY "3 Foot
DEPTH 3.0 feet maximum at Pier 2
ELEMENTS INSPECTED: Pier 2
REMARKS: Overall, the steel encased concrete piles were in good condition with 100 percent top coat failure from 1 foot above the waterline to the channel bottom exposing the primer coat and/or steel surfaces which exhibited light corrosion on 10 percent of surface area. An air conditioning unit was observed on the channel bottom at the upstream nose of the pier. The channel bottom appeared stable with no signs of scour observed.

FURTHER ACTION NEEDED: _____ YES ___X___ NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 36519
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E. 21491
WATERWAY CROSSED The Sturgeon River

INSPECTION DATE August 24, 2002

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 2	3.0’	7	N	N	9	N	7	8	N	N	7	7	N	7	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the steel encased concrete piles were in good condition with 100 percent top coat failure from 1 foot above the waterline to the channel bottom exposing the primer coat and/or steel surfaces which exhibited light corrosion on 10 percent of surface area. An air conditioning unit was observed on the channel bottom at the upstream nose of the pier. The channel bottom appeared stable with no signs of scour observed.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.